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ABSTRACT

This publication, the third in a series of seven for elementary schools, is an environmental education curriculum guide with a focus on waste management issues. It contains a unit of exercises selected for second grade students to introduce the ideas that littering causes environmental problems, both man-made and natural objects cause litter, and serious problems result when people do not taken responsible action. Litter is cited as one pollutant problem that very young children can comprehend and solve. They can learn to dispose of waste properly, help recycle some items, and come to understand how their own behavior affects the environment. The activities included in this unit nurture a first step in building a sense of environmental awareness and responsibility. The unit presents the following major ideas: (1) litter can injure people and animals; (2) litter takes money and effort to clean up, it wastes resources, causes pollution, and lessens the beauty of the environment; and (3) people cause litter and have the responsibility for handling waste properly. Each activity in the unit meets the Virginia Department of Education Standards of Learning Objectives for Science; however, the material is designed to be interdisciplinary and may also be used to meet social studies, health, language arts, mathematics, or art requirements. A list of additional resources (articles, magazines, educational curricula) is included. (MCO)

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OPERATION WASTE WATCH:

THE NEW THREE RS FOR ELEMENTARY SCHOOL

GRADE TWO

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OPERATION WASTE WATCH:
THE NEW THREE RS FOR ELEMENTARY SCHOOL
GRADE TWO

Foreword

Ten years ago, the Division of Litter Control developed a curriculum for elementary schools called **Operation Waste Watch,** an environmental education curriculum with a focus on waste management issues. The seven grade level, multimedia units have been widely used in classrooms across the state and are considered a national model for environmental education. Each unit came with a number of peripheral teaching aids, including film strips, classroom posters, and coloring or comic books, which emphasized the theme of the unit and were designed to be taken home by the students, thereby extending and strengthening the original messages of litter control and recycling.

The instructional core of the unit was in the activity cards which presented several lessons for class or individual participation. Each teacher could select among the activities incorporating only that material which he or she wished to use. **Operation Waste Watch** materials were designed to be interdisciplinary and may be used to meet science, social studies, health, language arts, mathematic, or art requirements. Activities in the second grade level of Operation Waste Watch correlate very precisely with several of the science objectives, as well as more generally with social studies, language arts and art objectives.

This new edition of our curriculum comes in a markedly different package: a Teacher's Workbook, rather than the slip case filled with materials. Our annual surveys showed that the film strips while desired, were rarely used. The cards were hard to keep track of. The original format was never designed for refills, continual orders, or maintaining over a period of time. Many unit components got lost or strayed. As teachers moved to other schools, **OWW** moved in bits or pieces. After ten years, it was time to update the bibliography and modify some of the activities to take into account the current state of the world of solid waste. All these conditions translate into a simpler format which will be easier to order and use. We hope you will enjoy this second edition of **Operation Waste Watch: The New Three Rs For Elementary School.**

THE ELEMENTARY SCHOOL NEW THREE RS

The theme of the second grade unit is **Litter Pollution.** Students learn the negative effects of littering, explore a littered area, study characteristics of litter, and learn how to clean it up. Major ideas of the unit include:

- Litter can injure people and animals.
- Litter takes money and effort to clean up, wastes resources, causes pollution, and lessens the beauty of the environment.
- People cause litter and have the responsibility for handling waste properly.

At the completion of this unit, the student will be able to identify man-made litter. Students will also recognize litter composed of natural objects. They will be able to identify littered objects which can hurt people or animals. Each student will recognize that individuals are responsible for disposing of their waste materials properly. Students will be able to identify containers for waste materials and recycled materials.

Litter is a very accessible pollution and one even very young children can comprehend. Children may be able to do very little to solve other environmental problems, but they can learn to dispose of waste properly, help recycle household and classroom items, and come to understand how their own behavior affects the environment. A waste management unit is an excellent place to begin creating environmental awareness. From this step, young people can develop a strong sense of environmental responsibility.

The activities selected for the second grade unit stress the ideas that littering causes environmental problems, and that both man-made and natural objects cause litter. However, the serious problems come from people who have not taken responsible action. The unit emphasizes the development of scientific observation and classification skills essential to the ultimate goal of preparing young citizens to make rational decisions about personal and community solid waste disposal.

The program will meet the following Standards of Learning Objectives for Science as presented by the Virginia Department of Education:

2.2

Students will observe and describe changes that take place over time in both living and non-living things.

2.4

The student will record and describe information gathered from observation or measurements.

2.5

The student will make inferences after observations or an object or an event.

2.6
The student will observe physical events and predict their outcome.

2.13
Students will know that there are different kinds of pollution in the environment and will suggest possible methods for reducing them in the community.

Several objectives of different content areas correlate with the activities in **Operation Waste Watch.**

Social Studies
2.2
The student will tell how and why rules protect rights and property.

2.7
The student will describe how people depend on each other for goods and services.

2.8
The students will identify natural resources of their locality and state their importance.

2.14
The students will gather and interpret information from simple pictures, charts and graphs.

Health
2.2
The student will recognize ways to prevent disease by keeping the home, school, and community clean.

2.10
The student will explain environmental factors that affect health.

2.14
the student will practice safe habits in the school environment.

Language Arts
2.10
The student will tell and write a brief personal or fictional narrative.

2.14
The student will communicate ideas, concepts, and feelings through creative dramatics.

Art
2.1
The student will present artwork that is inventive.

2.5
The student will demonstrate art motor skills.

2.9
The student will create textures in various ways.

UNIT OBJECTIVES

Unit objectives for Litter Pollution are:

Students will be able to identify man-made litter.

Students will be able to identify litter composed of natural objects.

Students will be able to identify littered objects that can hurt people or animals.

Students will recognize that each individual is responsible for disposing of his or her waste materials properly.

Students will be able to identify common containers.

Classroom sets of coloring books entitled "Let's Stop Litter" may be ordered from the Department of Waste Management by classroom teachers. Please allow three weeks for delivery. Contact:

Materials Technician
Department of Waste Management
Eleventh Floor, James Monroe Building
Richmond, Virginia 23219

804/786-8679

LEVEL: Second Grade
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LITTER POLLUTION

Natural Litter

(SOL Science 2.5, 2.6; Social Studies 2.8; Health 2.14; Art 2.9)

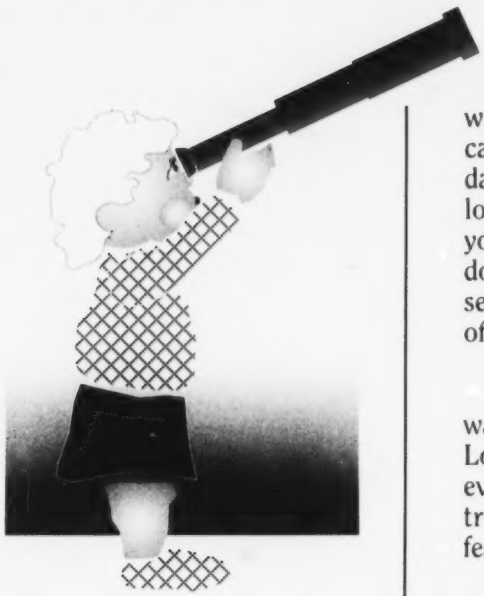
Discuss with the children some causes of natural littering. What kinds of things can be natural litter? (Pebbles, leaves, twigs, pine needles, pine cones, tree limbs can be found in any natural setting.) Most natural litter accumulates through natural forces and is useful to the environment in some way.

Tell the children that when tree limbs, twigs, leaves, and so on are left alone and allowed to rot, they will help make new soil. What are some other ways natural litter can help the environment?

Sometimes natural litter can be a problem. A pile of leaves in the middle of the road, for example, or a tree limb can cause problems. Can the children think of any others? (Rocks where children can trip or fall and hurt themselves.) What should be done with natural litter that causes problems?

Have the children bring in leaves which can be used in art projects. Do leaf rubbings: Glue leaves to large pieces of paper, smooth side down. After the glue has dried, place another sheet of paper over the leaf. Using the side of a crayon, rub it over the surface of the top piece of paper. The veins and shape of the leaf will appear. Use different colors of crayons for different leaves to make individual designs.

LITTER POLLUTION



The Litter Lot

(SOL Science 2.2, 2.4, 2.5, 2.6, 2.13; Social Studies 2.2, 2.7; Health 2.2, 2.14; Art 2.1)

Find a nearby area where the class can observe the problems caused by litter to people and animals. Some of the outlying areas of the school grounds would probably yield a good spot. The lot should measure about 15 by 15 meters. As a group, the class should measure and mark the boundaries of their lot. Following are several different activities that can be done in class in conjunction with Litter Lot walks. These can be done in one or two days, or stretched out over a longer time frame, whichever you prefer. You may wish to do the clean up activities several times over the course of the year.

1. Have the children walk around inside the Litter Lot. Have them tell you everything that they can see: trees, weeds, rocks, cans, feathers, nests, paper.

Back in the classroom, put the list on the blackboard. Ask the children which objects are manufactured and which are natural. Have a student put a star by the name of each manufactured object. Then have a student draw a circle around the man-made object which is also a container. Discuss the original use of each container — can or bottle or jar.

Ask the class, "Can any of these containers be used again?" "Can these items be recycled?" Discuss with the children good instances of reuse, or ways in which the containers might be recycled. Ask them, "Why is reusing something better than throwing it away?" Can they tell you the difference between reuse and recycle? Reuse is when an object is essentially unchanged and used in some useful way, rather than being thrown away. Recycling changes the form of the object but uses the materials it is made from to manufacture new objects.

2. Have the children draw pictures of their Litter Lot, including all the objects they saw. What do they like/dislike in the Litter Lot? Is there any pollution in the Litter Lot? Is litter a form of pollution? Write *pollution* on the board and discuss its meaning.

How did the litter get into the lot? Ask what the most common types of litter were. Put a list of these on the board. Ask the children to read the list aloud. Have them copy the list on their papers and illustrate each word.

Ask a child to come to the board, point to one of the words, and call on one of the other children to tell how this piece of litter might hurt animals or people. Proceed through the list.

Remind the children that people are responsible for disposing of their own trash properly. Have a class discussion about disposing of waste:

- in their houses
- in their yards
- walking down the street
- in the classroom
- in the hallway
- on the schoolbus
- on a boat
- in the park

3. Ask the students how people could make their "Litter Lot" a safer place for animals and people. People could: clean up the litter; put in a trash barrel; make No Littering signs for the lot; Adopt the Spot and put up the sign telling people that your school or club or family has done this; use ashtrays instead of throwing out cigarette butts which can cause fires; any other ideas?

4. Hold a clean up day for the Litter Lot. Help the children pick up all the man-made litter and any harmful natural litter. Have all the litter piled up in one place. Ask the children, where should this have been put instead of throwing it on the lot? Discuss the fact that a trash receptacle is the proper container for waste objects.

Leaves or rocks can be useful in the lot. A brush pile might be accumulated over time, giving living areas and shelter for small animals. Rocks can keep soil from eroding on a hillside, and they can also provide shelter for small creatures.

Help the children throw away the waste objects. Anything that can be recycled should be! Those items which can be reused should be cleaned up and put to reuse.

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LITTER POLLUTION

Waste in the Water

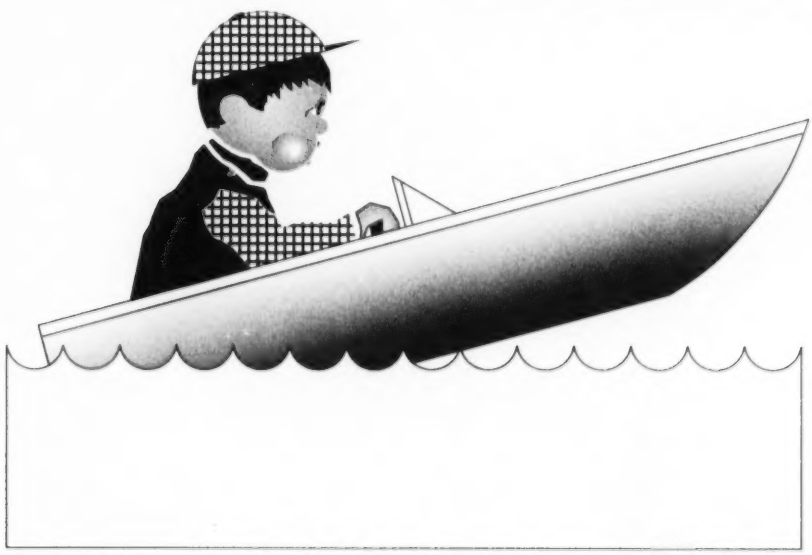
(SOL Science 2.2, 2.4, 2.5, 2.13; Health 2.2, 2.10)

Partially fill a large jar with water. Ask the class, what does the water look like? What does it smell like?

Put some small pieces of litter in the jar. Use: paper, glass, fruit peel, plastic, aluminum. Before each goes into the water, ask the children what will happen to the piece of litter? What will happen to the water?

Keep the jar at the front of the room. After about a week, have the children answer these questions:

- Which pieces of litter change?
- Which pieces of litter stay the same?
- Does the water change color?
- Can litter cause water pollution?
- What might happen to plants and animals that live in this water?
- What litter might cause other problems besides pollution?



Considering Containers

(SOL Science 2.4, 2.5, Social Studies 2.2, 2.8, Art 2.5, Health 2.2, 2.14)

Make a display of several different empty containers. Discuss with the children that containers are used to hold something else. What happens to the container when all its contents have been used up? Have the children think of some containers, like a toothpaste tube, which cannot be used once they are emptied. Name some containers which can be reused.

A class project making pencil holders from juice cans or whatever you can come up with would be a concrete way to reinforce the concept of reuse.

Some containers cannot be reused, but can be recycled. Give some examples of these. How many of the class recycle their beverage cans, milk jugs, or soda bottles already?

Some containers are used only as containers — like those in the classroom which hold waste. Have the children look around the classroom and pick up any litter they might find, and dispose of it properly in the appropriate container.

Problems in the Wild

(SOL Science 2.6; Social Studies 2.14; Health 2.2; Language Arts 2.14)

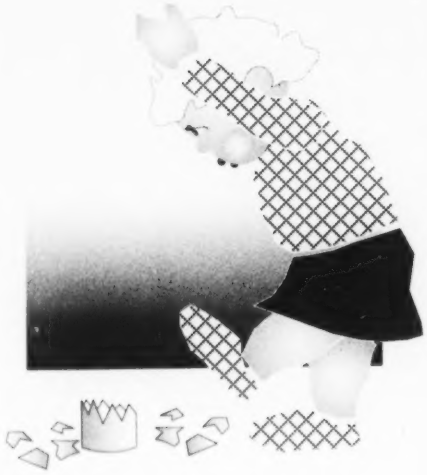
The problems that wildlife faces caused by the careless habits of people have been widely documented during the past several years. Many magazines (**Audubon, National Wildlife, Smithsonian,** and the news magazines) have run pictures of litter-injured birds and sea creatures entangled in 6-pack ring carriers or fishing line. Other reports have been written on animals who ingest plastic pellets, toys or bags and starve because the plastic material remains in their bodies without providing nutrients. Plastic bags fool sea turtles who think they are eating their favorite jelly fish. Shrews and chipmunks, who cannot pass by an opening without investigating it, get trapped in bottles and jars. Balloons are another notorious junk food for animals in the wild. Tell the children that legislation has been passed recently which discourages massive balloon releases because of concern for wildlife.

Have the children make posters using litter material and showing pictures of animals in the wild being hurt. Have them come up with some effective slogans highlighting the problems litter can cause to wildlife.

Litter Can Be A Real Pain

(SOL Science 2.4, 2.6; Social Studies 2.2; Health 2.10; Lang. Arts 2.10; Art 2.1)

Litter sometimes can be more than an eyesore. Have the children in the class



make up a poem about how man-made litter can hurt animals and people. Have others draw a picture of a time when they, or someone else, were hurt by litter; for example, stepping on a nail or getting cut on some broken glass. Make a bulletin board display of some of the poems and pictures.

After they see the display, children may have some solutions to the problem of hurtful litter. Have some of these solution poems or pictures added to the display. A good way to display these would be in a before and after format; **before** showing the litter or problem, and **after** showing the problem helped.

ADDITIONAL RESOURCES

Articles:

Rathje, William; "Once and Future Landfills;" *National Geographic,* May 1991; published by the National Geographic Society, Washington, DC.

Rathje, William; "The Garbage Crisis;" *Atlantic Monthly*; December 1989.

"Reading, Writing, and Recycling, A Catalog of Education Materials;" *resource RECYCLING,* December 1990, published by Resource Recycling, Portland OR 97209.

"Recycling Makes the Grade in Schools," *Reusable News,* Spring, 1990; United States Environmental Protection Agency; RCRA Information Center, 401 M Street S. W., Washington DC 20460.

"The Trashing of Virginia;" series of articles printed in the Richmond *Times Dispatch;* August 26-29, 1990; Richmond Newspapers, Inc.; Richmond VA 23261.

Magazines:

Garbage: The Practical Journal for the Environment; published bi-monthly by Old House Journal Corp.; 435 Ninth Street, Brooklyn NY 11215.

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resource RECYCLING: North American's Recycling Journal; published monthly by Resource Recycling, Inc.; 1206 N.W. 21st Avenue, Portland OR 97209.

Waste Age; published monthly by the National Solid Waste Management Association; Suite 1000, 1730 Rhode Island Avenue, N.W., Washington DC 20036.

Educational Curricula:

A Curriculum Activities Guide to Solid Waste and Environmental Studies (K-12); Institute for Environmental Education; 3200 Chagrin Boulevard, Cleveland OH 44124.

Garbage In America; Refuse Industry Productions, Inc.; P. O. Box 1011, Grass Valley CA 95945.

Garbage Reincarnation: Curriculum Guide (4-6); Garbage Reincarnation, Inc.; Post Office Box 1375, Santa Rosa CA 95402.

Let's Recycle (K-6, 7-12); The United States Environmental Protection Agency; Public Information Center, 401 M Street, S.W., Washington DC 20460.

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Mobius Curriculum: Understanding the Waste Cycle (4-6); Browning Ferris Industries, Inc.; 8607 Roberts Drive, Suite 100, Atlanta GA 30350.

New Three Rs: Reduce, Reuse, and Recycle (6-12); Virginia Department of Waste Management; Eleventh Floor, James Monroe Building, Richmond VA 23219.

People and Their Environment (1-3, 4-6); A conservation project of the National Council of State Garden Clubs, ©Brentree Environmental Center; Brentree Farms, Inc., Milford PA; published by Bayberry Press; Port Washington NY.

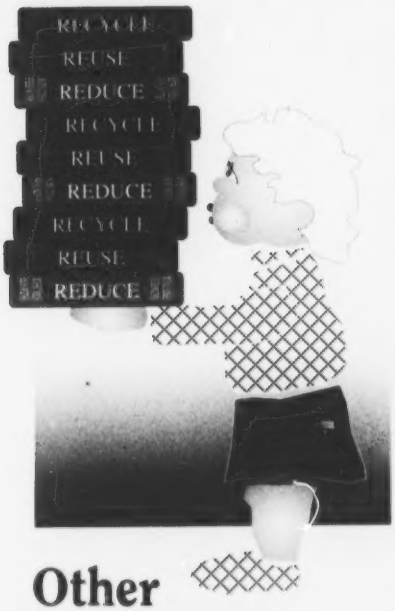
Project WILD (K-6); contact Virginia State Coordinator Suzie Gilley, Wildlife Education Specialist; Department of Game and Inland Fisheries; P. O. Box 11104, Richmond VA 23230-1104.

Save It! Easy Environmental Tips to Save the Earth; developed by Corporation for Public Broadcasting; published by Custom Print, Inc.; 2611 Shirlington Road, Arlington VA 22206.

Think Earth Environmental Education Program (K-3, 4-6 available 1992); Educational Development Specialists; Think Earth Customer Service, 5505 East Carson Street, Suite 200, Lakewood CA 90713.

Waste: A Hidden Resource (7-12); Keep America Beautiful, Inc.; 9 West Broad Street, Stamford CT 06902.

Waste In Place (K-7): Keep America Beautiful, Inc.; 9 West Broad Street, Stamford CT 06902.



Other Information:

The Fourth R: An Implementation Guide for School Recycling and Solid Waste Management; produced by Association of Vermont Recyclers; P. O. Box 1244, Montpelier VT 05601.

How to Set up a School Recycling Program; produced by the Council for Solid Waste Solutions; 1275 K Street N. W., Suite 400, Washington DC 20005.

Setting Up a Solid Waste Recycling Program in Schools; ©J. Winston Porter; produced by McDonald's Corporation; One McDonald's Plaza, Oak Brook IL 60521.

NOTES:

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